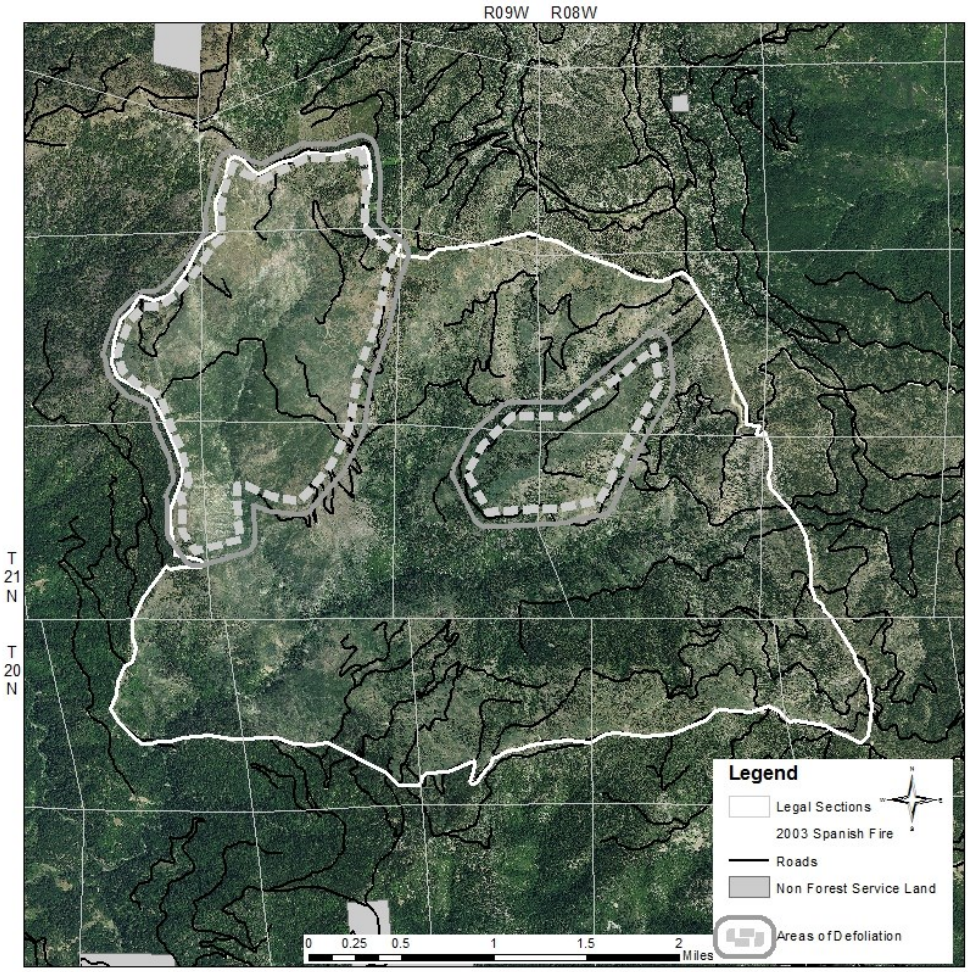
Defoliation of Mountain Whitethorn and Whiteleaf Manzanita by Western Tent Caterpillar within the 2003 Spanish Fire

By Andrew Mishler, Forester, Mendocino National Forest
June 2014

Extensive western tent caterpillar defoliation to whitethorn (*Ceanothus cordulatus*) and whiteleaf manzanita (*Arctostaphylos manzanita*) within the 2003 Spanish Fire (approx. 6,000 acres) was observed in June 2014. Deerbrush (*Ceanothus integerrimus*) in close proximity to whitethorn was also defoliated, but to a lesser extent than whitethorn and manzanita. Brush heights ranged from 2 to 5 feet tall. The percentage of brush affected ranged from upwards of 90 percent of whitethorn to 75 percent of manzanita (based on visual estimates). It is estimated that 1,000 to 1,500 acres are affected within the Spanish Fire. The defoliation appears to be affecting areas that burned with high intensity during the fire.



Map of the 2003 Spanish Fire with known areas of defoliation highlighted.

A literature search for similar occurrences revealed that in 1957, a similar outbreak was discovered and followed in the vicinity of Chester and Westwood, CA. The outbreak lasted approximately 3 years, after which the shrubs began to recover. Although defoliation resulted in very little mortality, it is unknown how the current drought may affect recovery. It is unknown how long the current defoliation event has occurred, but remains ongoing based on the number of live caterpillars observed and recent defoliation.

The brush species affected in the current outbreak do have some value as forage for deer and other mammals, and whitethorn can fix nitrogen, enriching poorer soils over time. Birds and small mammals will also utilize dense shrub cover for habitat. Very little conifer regeneration has been observed within the fire footprint, and extensive brush cover may be inhibiting the establishment of seedlings.

Some defoliation was noted in locations that were planted post-fire with pine (*Pinus ponderosa* and *Pinus lambertiana*) and Douglas-fir (*Psuedostuga menziesii*) that are 3-4 feet tall (approx. 5 years old). Additional soil moisture may be available to young conifers as a result of the defoliation, particularly during an extreme drought year.

A field visit was made by Cynthia Snyder, Forest Service Entomologist, who confirmed it is western tent caterpillar and believes that it is being heavily parasitized or affected by a viral disease. Fluctuating populations of western forest tent caterpillars are often associated with density-related parasitoids and outbreaks of nuclear polyhedral virus during periods of high population numbers. Infected larvae have been observed to climb to the tops of trees and plants to die. The current population has already pupated and flown, and it will be interesting to see if the outbreak continues into 2015.

It is recommended that the current outbreak be visited periodically to determine whether defoliation is causing whitethorn mortality, with no management action at this time.

Brownish-gray area in both photos shows the extent of western tent caterpillar defoliation. Some clusters of leaves remain, but the defoliation is quite extensive.

Wickman, B. E. "Effects of Defoliation by the Great Basin Tent Caterpillar on Greenleaf Manzanita and Mountain Whitethorn Ceanothus." *Research Note/Pacific Southwest Forest and Range Experiment Station. Forest Service. US Department of Agriculture* 204 (1962).

Kukan, B. & J.H. Myers. 1999. Dynamics of Viral Disease and Population Fluctuations in Western Tent Caterpillars (Lepidoptera: Lasiocampidae) in Southwestern British Columbia, Canada. *Environmental Entomology* 28(1): 44-52.